Water for Tea

National Aeronautics and
Space Administration

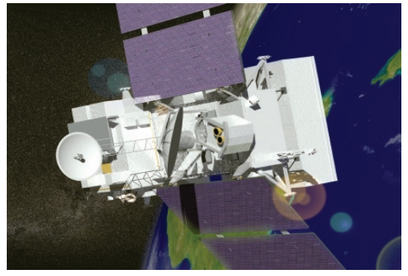
Water for Tea

Production Notes

Global Precipitation Measurement

GPM – An International Commitment

GPM stands for Global Precipitation Measurement. A multinational endeavor designed to transform human understanding about the water cycle, GPM will be an Earth science research project like no other in history. The project will rely on four principal components:



The Primary Spacecraft – Sent into space on the wings of experience earned in prior research missions, this vehicle will be the most advanced precipitation measuring system ever. It's designed to be the brightest star in a constellation of precipitation-measuring satellites. The primary spacecraft will collect detailed data about the structure and frequency of precipitation .as it orbits the globe. Further, data collection from the primary vehicle will serve as a standardized reference, so that each of the other satellites in the constellation can be properly calibrated. The primary spacecraft is a joint effort of the U.S. and Japanese space agencies.

An International Constellation – The sophisticated primary spacecraft may be state of the art, but it will not be able to cover the whole planet at once. That's why the GPM project will rely on a fleet of additional satellites to help collect precipitation data. Working as an integrated team, the orbiting network of sensors is expected to collect accurate views of the planet's precipitation picture several times a day, a profound improvement over earlier systems. While a few of these constellation satellites will be NASA craft, many will come from international partners. This emphasis on global cooperation will not only help distribute the sizeable task of managing such an ambitious project, but also reinforce the underlying truth about the Earth's water cycle: What happens in one part of the world can have profound implications for another part. For research that seeks to better understand a planet-scale system like the water cycle, the significance of an international effort is metaphoric as well as practical.

Calibration/Validation Sites - The water cycle is a complex system. By design, GPM will leverage multiple perspectives simultaneously to achieve its unprecedented view of our planet. While satellites look down from space, researchers on the ground will be busy, too. Measurements taken at local scales, like those planned for ground sites scattered around the world, will not only help calibrate the space-based readings of the fleet, but also provide vital detail to the river of data expected overall. Experts say that an understanding of local-scale water-cycle behavior is imperative to understanding how parts of the complex water cycle fit together and interact. Additionally, ground sites will be important nodes for local water management officials to put lessons learned overall into place.

Global Precipitation Data Center - GPM could not even have been considered prior to the information age. With a fleet of advanced spacecraft, ground sites, field missions, and researchers around the world collecting data, the creation of an advanced data management center is imperative. In fact, the data center planned for construction at the Goddard Space Flight Center will itself be a marvel of technological sophistication. Besides simply archiving all the newly

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The Source
Stock Video

Special Thanks
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Jehovah-Jirah Farms
John Gurlach/NASA Wallops Flight Facility
Screenscope, Inc.
American Museum of Natural History, New York, New York

Shot on location in Dickerson, Maryland, Key West, Florida,
and Flite 3 Studios in Baltimore, Maryland.

Produced for NASA by
Honeywell Technology Solutions, Inc.

The Tao that can be named is not the Eternal Tao.
— Lao Tsu

Credits

Written, Produced, and Directed by Michael Starobin

Director of Photography - Mike McClare
Editing - Rich Melnick
Music - Andre Gribou
Narration -Patrick Stewart
Animation - Conceptual Image Labs (GSFC)
Chris Meaney
Susan Twardy
Visualization - Scientific Visualization Studio (GSFC)
Joycelyn Thomson
Stuart Snodgrass
Lori Perkins
Marte Newcomb
Horace Mitchell
Greg Shirah
Visual Effects Supervisor - Chris "Binky" Heuer
Sound Engineering and Foley - Mike Velle
Continuity - Sarah DeWitt
Large Format Printing - Marte Newcomb
Brush Painting - Susan Twardy
Production Designer - Kinnereth Remington
Construction Coordinator - Gary Flowers
Set Dresser - Chris Ashley
Scenic Painter - Gigi Lepski-Smith
Gaffer - Bob Waybright
Electric - Steven Seitz
Jib Technician - Jim Harris
Jib Sled Grip - Rodney French
Assistant Jib Sled Grip - Joey Bruce
Storyboards - Mike McClare
Conceptual Artist, Storyboards - Aaron Shirley
Color Correction - Rich Melnick, Fred Kemman
AVID System Support & Asst. Editor - Fred Kemman
Production Asst./Stock Footage Research - Sarah DeWitt
Production Asst./Stock Footage Research - Katie Stofer
Contracts & Accounting - Mike Velle
Scientific Consultant - Dr. J. Marshall Shepherd, NASA
Spacecraft Engineering Consultant - Gordon Casto
DVD Authoring - Mike Velle
DVD Authoring Asst. - Stuart Snodgrass
DVD Video Editing - Mike McClare
Executive Producer for Honeywell - Patrick Kennedy
Executive Producer for NASA - Wade Sisler

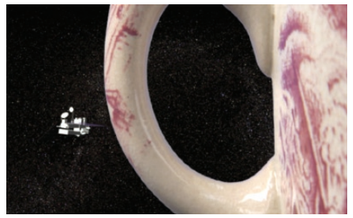
collected information for various uses, the center will produce and distribute precipitation maps, application products, and analyses of global climate.

Ultimately the GPM project is a mission designed to provide a better understanding of the Earth's climate. Precipitation circulates energy in the atmosphere; it's the engine that largely propels the planet's biosphere.

This mission signifies a major commitment to improve climatological understanding and predictions for the global community.

But in a more immediate sense, GPM will study a major component of weather. By collecting near real-time measurements about precipitation in its many forms, scientists will be able to generate significantly improved computer models about how weather works. Similarly, experts and policy makers will have new tools for providing better flood predictions and fresh-water management strategies to communities around the world. GPM will not simply be more eyes in the sky. It is a mission designed to gather and contextualize new data into relevant meaning.

Water for Tea – The Movie



For an innovative mission like Global Precipitation Measurement, project managers decided to try an innovative means for letting the world know about its work. They commissioned a short film about the project, but encouraged the film's production team to start with a fresh sheet of paper. The result is Water for Tea, a movie about a high-tech, high-profile mission that seeks to grab viewers' attention through images of teacups and teapots. What's going on here?

Recognizing the challenge of translating the often arcane, techno-jargon of advanced space-based research to people who may be unfamiliar with that rarified language, the production team set about devising a world of their own. They needed a way to implicitly relate the political and scientific importance of GPM without having to delve into its nuts and bolts. The environment they created for the movie established the rules right away. Teacups and a teapot stand in for satellites that will comprise the GPM fleet, as well as for features of the Earth's fresh-water environment. They sit on an ethereal table in a quiet, meditative space. It's a visual motif designed to create a relationship between the immense scale of a space-based satellite fleet and individuals on the ground.

Thematically, the table acts like the Earth. It is both unpredictable and powerful. As the movie progresses, the table suggests not only a transformable environment, but also a place for contemplation and creation. When a painting appears draped across the table's surface, we see an artist's expression of the foliage that fills the space around the table-an expression of the larger world represented by nothing more astounding than ink on paper. We see the Earth as the province of human contemplation and creativity.

Cameras Rolling

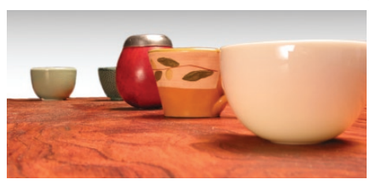
Although two important location shoots took place during the autumn of 2002, full-scale production of Water for Tea did not begin in earnest until March of 2003. Produced by the television and multimedia group at NASA's Goddard Space Flight Center, this movie would ultimately challenge that team with its most complex production to date, both in terms of technical difficulty as well as communicative intention. With preliminary footage already in hand, the production team set about the task of creating a highly stylized space that would be immediately understandable to wide audiences.

With digital production elements well underway, principal photography did not commence until the first week of May 2003. Shooting on a custom-designed set took place at Flite 3 Soundstages in Baltimore. In one grueling week, 90% of all the footage concerning the table, the teacups, and their interaction made it from raw materials into images on high-definition videotape.

That in itself is worth a note, too. Although the final cut of Water for Tea was delivered in so-called "standard definition" television resolution, the production acquired as much principal footage in HDTV as possible for several reasons. Not only would the images convert from HD to SD images with sterling clarity, but a number of special effects images concerning the use of motion tracking could be more precisely delivered with the dramatically enhanced images that HD video could deliver.

Animation – The Conceptual Image Lab

In consultation with GPM's actual satellite engineers, Goddard Television's principal spacecraft animator began the process of bringing a still-evolving high-tech system to life. There were challenges. For example, how would animations of various satellites in the fleet relate in a logical way to small-scale objects like teacups and a wooden table? How would the Conceptual Image Lab effectively manipulate enormous data-driven imagery of the Earth's surface? Of greatest importance, however, was the development of animations that would convey a similar visual style to the live action footage being shot elsewhere. The movie needed to be "of a piece," and the look and feel of the camera in virtual space needed to be similar to that in the real world.



But spacecraft design constituted only half the animation tasks. One of Goddard's other animators needed to bring several cognitive yet intangible concepts to life as counterpoints to the machinery and hardware appearing in other scenes. The result? In two key sequences, the viewer experiences a nonliteral description of the water cycle's importance to ordinary life. As with most things of beauty, the work done in the Lab looks easy. It was not. Working with artificial 3-D geometries, large numbers of individual motion paths, matching video elements, and delicate color correction, these scenes help create the overall dreamy, surreal environment for the movie.

Buson was born near Osaka, Japan, in 1716. Known also as a significant painter as well as a poet, Buson established himself as an important artist with his ability to portray simple scenes in ways that implied something transcendental. Heavily influenced by Chinese painting and poetry styles, Buson inevitably absorbed an intuitive understanding of the Tao, the hard-to-articulate essence that Chinese philosophers use to describe the eddies and currents of the universe. As such, Buson's poetry and paintings are less concerned with the physical nature of some thing or place and more concerned with the inner, more essential aspects of a subject. He died in 1784.

stroke, and the plum branch stroke. Yet despite this seemingly narrow range of available techniques, artists have nearly infinite freedom to explore. The introspective, disciplined thinking required to make The Four Gentlemen live is part of what enables this elegant art form to communicate so powerfully.

The Poetry of Water for Tea

William Carlos Williams

Williams life and work in many ways mirrors the aesthetic soul of Water for Tea. Professionally trained and employed in the disciplined and structured world of early twentieth-century medicine, Williams found his passions in letters. As one of the progenitors of literature's Imagist movement, Williams employed his diligent and precise powers of observation in rendering the most minute aspects of daily life into sublime images. In fact, Williams, like his contemporary Ezra Pound, believed that image alone could communicate just as powerfully, if not more so, than sentimentalism or intellectualism.

Williams worked as a pediatrician in Rutherford, New Jersey, most of his life, but devoted himself to his literary passions whenever possible. Unsatisfied with what he often regarded as elitist, inaccessible formalism in the contemporary poetry of his era, he helped to shape the sound and sensibility of a new artistic voice in a new century.

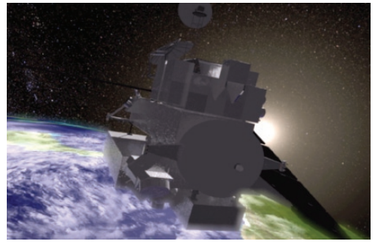
To some extent, Williams trenchant observations and clear articulations suggest a cautionary, philosophical echo for these modern, technologically driven times. In terms of how much pure information suffuses our collective lives, Williams suggests that it is our clarity of focus, both in terms of acuity as well as context, which best describes and defines life.

Williams was born September 17, 1883, in Rutherford, New Jersey. He died on March 4, 1963 later that same year he was awarded the Pulitzer Prize for Literature for his collection Pictures from Breughel.

Yosa Buson

Truth can be subjective. An accurate description of an object or tableau presents the teller with nearly infinite choices for nuance, detail, and context. In Yosa Buson's poetry, truth comes from the precise articulation of something's idealized essence, rather than its realistic depiction.

Visualization – The Scientific Visualization Studio



GPM is still being designed. It will not be fully operational for years. Yet the need to portray aspects of its very practical, authentic utility was an important goal for the movie. That's where the Scientific Visualization Studio shines. Using data from already existing spacecraft, the SVS designed two sequences for the movie that help tie the more conceptual elements of the film to reality. In one sequence we are taken on a high speed tour of different continents in relationship to each other. To match both the pacing of the narration as well as thematic intention of effortless travel, the computing experts in the SVS delivered a custom flight path around the world. The waypoints were carefully selected, the changes in direction each precisely finessed. It was also, by request, unusually long. With additional footage, the sequence's playback speed could be accelerated or slowed in the editing process to precisely match narration and give the idea of effortless travel.

The SVS also delivered a major element for a complex sequence near the end. As the viewer progresses up an idealized river towards an unknown destination, we pull back to low-Earth orbit. The river winds and bends as the camera follows. Pulling higher above the Earth, we see the river in the context of a great desert, a ribbon of life amid the burning sands of some unknown zone. The message is clear: This river makes the desert bloom. No satellite has ever flown over a river in quite this way. Yet the team in the SVS gave the journey wings. To achieve it, the artists there color corrected and stitched together a collection of different data sets and images, carefully creating a seamless view of what we later discover to be the Nile River in Egypt.

The Right Voice - Narration by Patrick Stewart

In terms of strong communication, style often matters as much as message. In the early stages of this production, it rapidly became apparent that Water for Tea didn't simply need a good narrator; it needed the right narrator. To convey properly the conceptual and thematic goals of the movie, the vocal performance would need measures of subtlety and strength. The job needed someone who understood the sounds of poetry and drama, someone who could tap into a sense of wonder while at the same time convey a sense of significance about the mission. In the performance delivered by Patrick Stewart, Water for Tea found its voice.

Stewart recorded the text for the movie in June of 2003 as the production was nearing its final phases. The session took place in a recording studio in the SOHO neighborhood of London, with schedules carefully orchestrated to accommodate mutually crowded calendars. Stewart admitted that Water for Tea caught his attention because it did not look or sound like an ordinary piece of Government outreach. In both its dreamy narrative style and its international message of shared experience, Stewart found a project that appealed

to him as an artist.

Known around the world as the embodiment of starship captain Jean-Luc Picard on the hit show Star Trek, Patrick Stewart has built his formidable reputation by investing complex roles with deep layers of humanity. His many movie appearances include Excalibur, Dune, LA Story, Jeffery, Robin Hood: Men in Tights, Conspiracy Theory, Moby Dick, X-Men, X-2: X-Men United, the Star Trek films, and many more. While his roles in Star Trek and the blockbuster X-Men movies may immediately summon a mental picture of him, Stewart's career dates back to the 1960s when he was a member of the Royal Shakespeare Company in England. Since then he has appeared on many of the world's premier stages, in roles ranging from the classical to the contemporary. In 2001, Britain's Queen Elizabeth made him an Officer of the British Empire (OBE).

In the summer of 2003, Stewart received rave reviews for his lead role in Henrik Ibsen's play "The Master Builder."

Water for Tea: Metaphor and Message

GPM is taking shape in the real world. Engineers are busy making plans; documents and schematics and money circulate; scientists are developing their goals.

So why make a movie about GPM in a very surreal world populated by animated paintings and morphing teacups?

It's about making a connection. By portraying the mission in metaphoric terms, the movie asks viewers to make a personal investment in the message. Viewers are forced to bring themselves to the movie in a way that a more didactic style could not have achieved. Metaphor is powerful in this way. Each of us comprehends the world as a grand contextualization; things we know only have meaning insofar as they relate to other things we know. By designing this movie in terms that are immediately identifiable to viewers, Water for Tea seeks to build context for those ideas that may be new or unfamiliar. It asks viewers to become partners in the message as they bring themselves to the main theme-that the water cycle matters to all of us and we must study it to be proper stewards of the Earth.

Why tea?

It's universal. Nearly every culture on Earth makes some form of common beverage by steeping locally grown leaves.

It's international. People grow tea-from camellia sinensis leaves, to its herbal analogues-everywhere. Cultivation and trade in tea run parallel to much of human history over the last several centuries.

It's simple-just fresh water and a botanical mix of choice. Yet infused in that elegant simplicity, deep cultural feelings often attend.

When the GPM project commissioned this movie, it wanted to communicate the significance of the mission in terms that would make sense not only to a diverse, international audience, but communicate in ways that emphasized the shared experiences we all have in relationship to the water cycle. Rather than build a narrative on some grand, geographically specific themes, Water for Tea looks at shared global responsibility through the other side of the telescope. By focusing on the small, often quiet and intimately shared experiences that generally reflect the making of tea, Water for Tea strives to imply that it is these ordinary things that most matter, that most bind us all as a species, even while we strive for grand, large-scale achievements like GPM.

Clarity of Line – A Few Notes about Sumi-e

Writing poetry and the physical act of writing poetry are inextricably linked in traditional Japanese literature. Both seek to convey the essential spirit of a scene rather than simply an accurate description of it. As such, the highly disciplined are of shodo, or calligraphy, is often integral to the life and meaning of a poem.

Sumi-e is the natural extension of that discipline. Translated roughly as "black ink," sumi-e uses only black pigment and careful brush strokes to imply color. The results can be striking. With a traditional economy of strokes, the artist can often evoke a complex scene, usually of the natural world.

Traditional sumi-e uses only four principal brush strokes, known as "The Four Gentlemen." They are the bamboo stroke, the wild orchid stroke, the chrysanthemum